

# User Manual

TOTOLINK Wireless-N Range Extender



[www.totolink.net](http://www.totolink.net)

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# Chapter 1 Product Introduction

Thanks very much for purchasing this Wireless N Range Extender. This guide will introduce you how this device work and how to configure it.

## 1.1 Overview

This is a 2.4G wireless range extender that is designed to expand your existing wireless network signals and coverage. Users can extend their wireless network just by placing this extender between the wireless router and wireless devices. So that it can make more wireless device to access Internet, such as iPads, iPods, Notebooks, Smart Phones, Game Consoles and TV. Generally, they can effectively meet users' demands for wireless Internet access on hard-to-reach areas.

## 1.2 Main Features

- Complies with IEEE 802.11n and IEEE 802.11g/b standards for 2.4GHz Wireless LAN.
- Mini size, portable for users.
- Allows more users to share one account to access Internet.
- Easy plug and play, no configuration required.
- Supports WPS (Wi-Fi Protected Setup) with one-click button.
- Power ON/OFF button is easy for users to control the device.
- Low power consumption and no radiation.

## 1.3 Appearance



EX150



EX300

### 1.3.1 LED Indicators

Name	Status	Description
WiFi	On	WiFi is on but no data transmitting exists

	Blinking	Successful wireless connection with data transmitting
Extending	On	Connected with Upper AP has been completed
	Blinking	Connecting with Upper AP
	Off	No connection with Upper AP
LAN	On	Successfully connected with the LAN port and no data transmitting exists
	Blink	Successfully connected with the LAN port with data transmitting
	Off	There is no device linked to the LAN port

### 1.3.2 Button and Port Description

Name	Description
Power	This button can turn on/off the device.
RST/WPS	With the extender powered on, press the button for 1 second, it is WPS working. For 5~10 seconds, the device will reboot to its factory default settings.
LAN	This port is used to connect to PC.

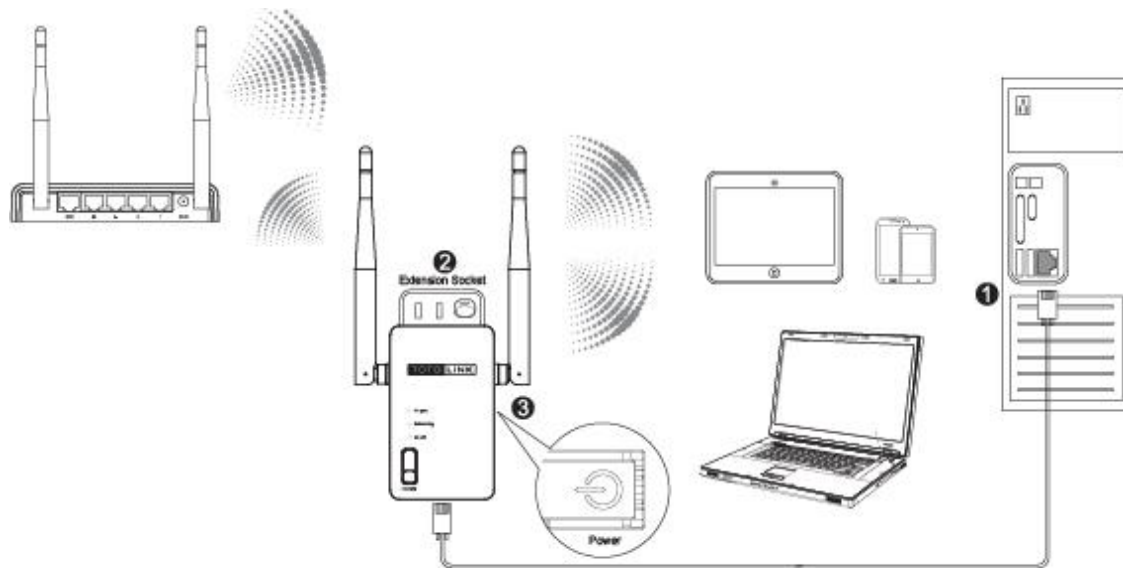
## Chapter 2 Hardware Installation

This chapter will tell you how to connect your PC and the device, how to configure the PC to make it access the web setup interface of the extender. So please read the following contents carefully to create correct connections and configuration.

### 2.1 Connecting the device

The extender provides one LAN port for PCs to connect. Please follow below steps to build a right connection between PC and this device.

1. Connect the LAN port to your computer's network interface.
2. Plug the extender into a wall outlet.
3. Press the power ON/OFF button to start the device.



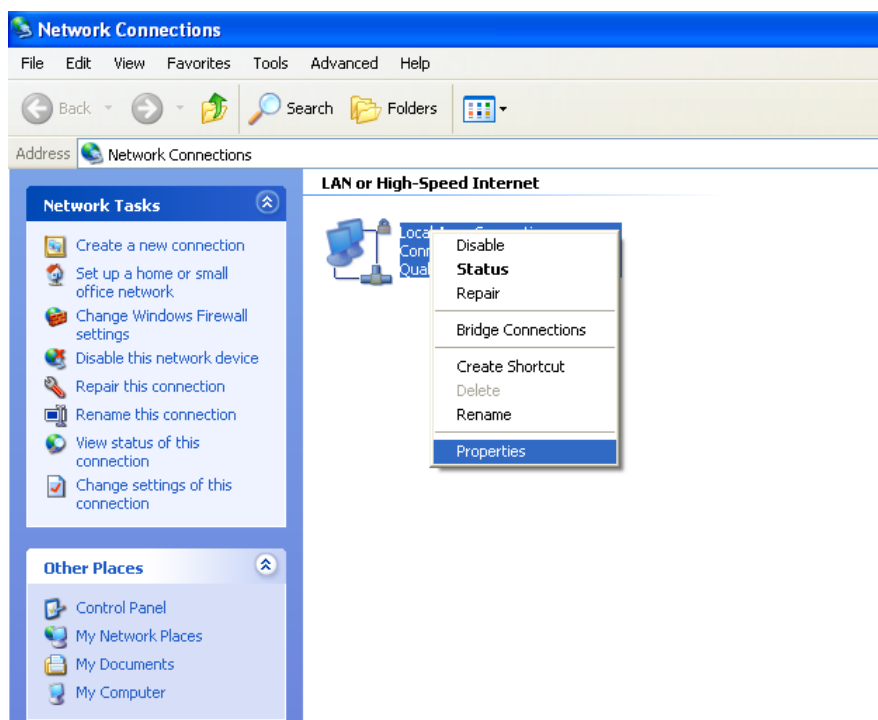
### 2.2 Configure the PC

The default IP address of this extender is 192.168.1.254, the default Subnet Mask is 255.255.255.0. You can only configure the IP address of your PC manually. Please follow below steps to configure your PC correctly.

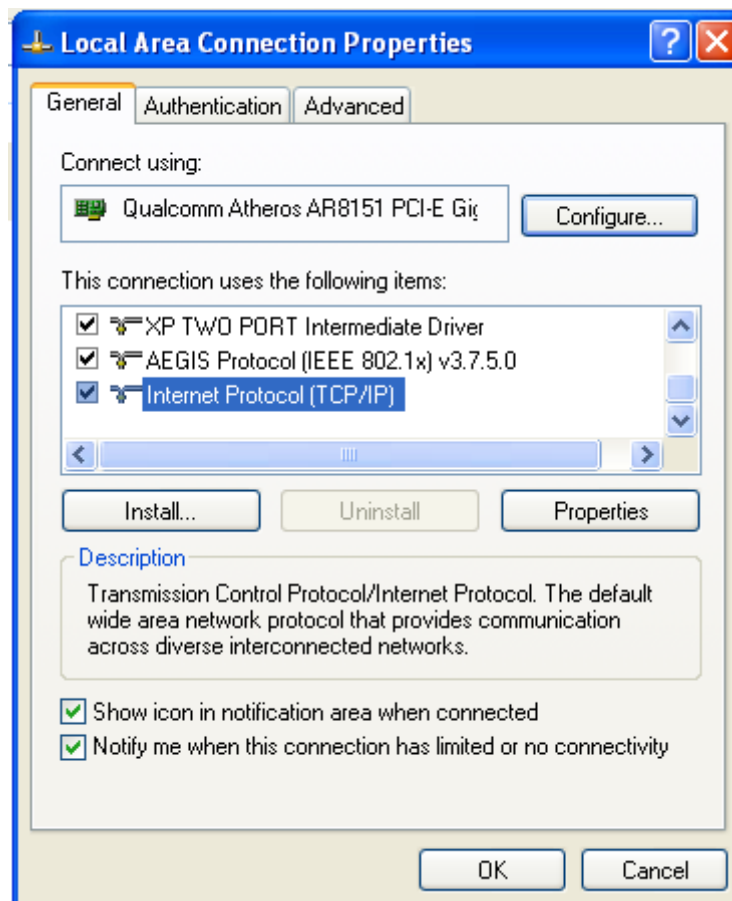
1. Right-click **My Network Places** on your desktop and choose **Properties**.



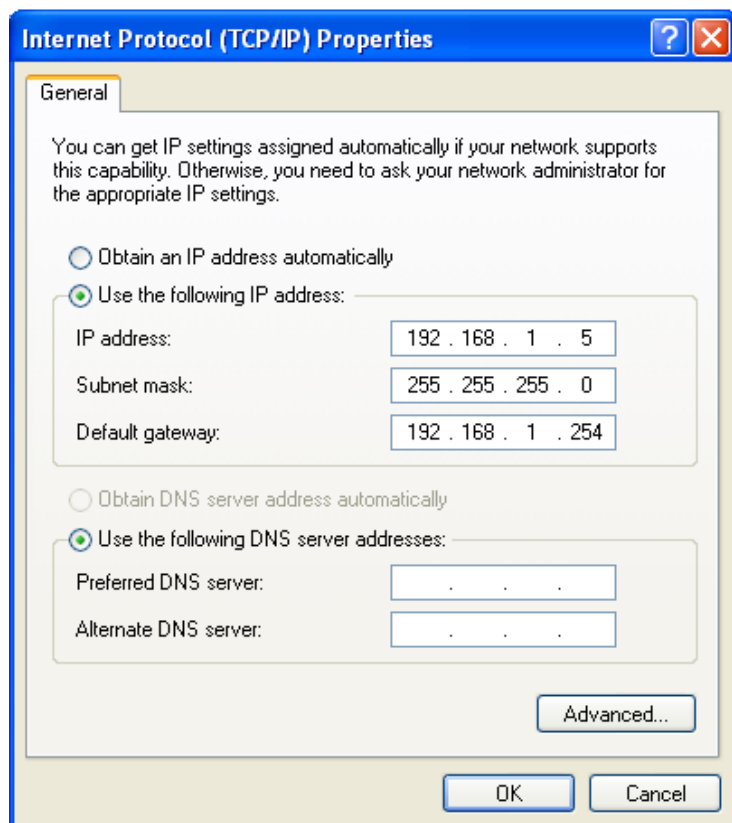
2. It will pop up the following window. Please right click **Local Area Connection** and choose **Properties**.



3. Double-click **Internet Protocol(TCP/IP)** :

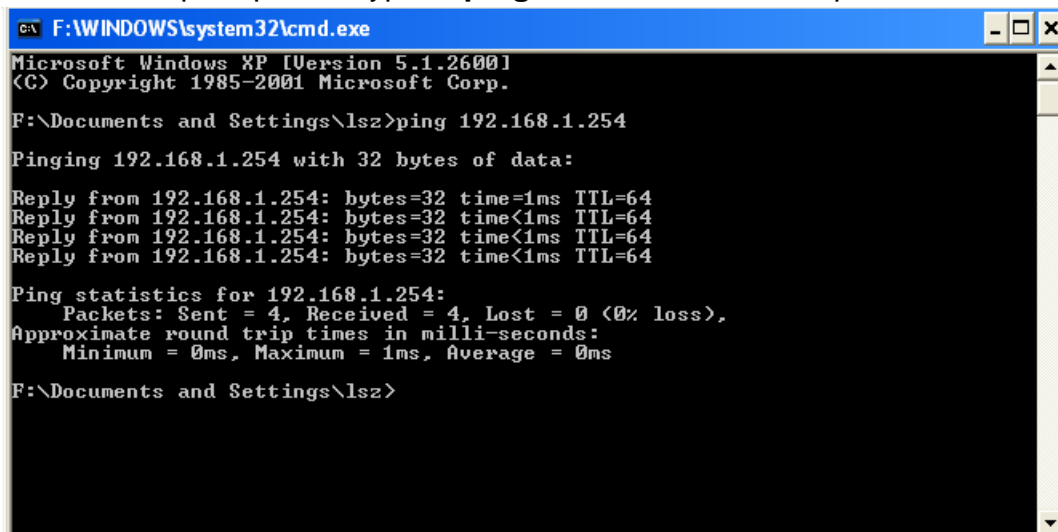


4. Configure the IP address manually, see below:



5. Verify the network connection between your PC and the device. Open a

command prompt, and type in **ping 192.168.1.254**, then press **Enter**.



```
C:\ F:\WINDOWS\system32\cmd.exe
Microsoft Windows XP [Version 5.1.2600]
(C) Copyright 1985-2001 Microsoft Corp.

F:\Documents and Settings\lsz>ping 192.168.1.254

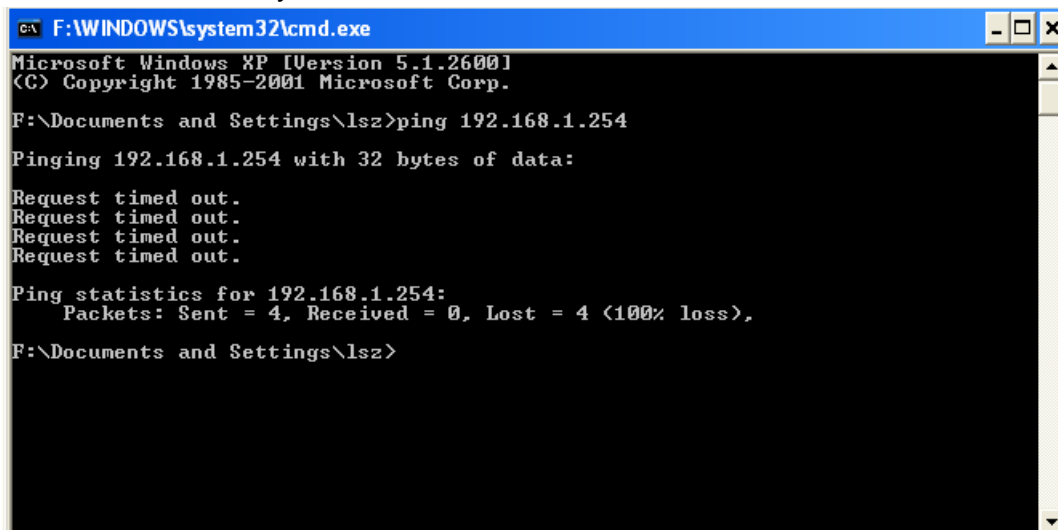
Pinging 192.168.1.254 with 32 bytes of data:

Reply from 192.168.1.254: bytes=32 time=1ms TTL=64
Reply from 192.168.1.254: bytes=32 time<1ms TTL=64
Reply from 192.168.1.254: bytes=32 time<1ms TTL=64
Reply from 192.168.1.254: bytes=32 time<1ms TTL=64

Ping statistics for 192.168.1.254:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 1ms, Average = 0ms

F:\Documents and Settings\lsz>
```

If the result displayed is similar to that shown in above figure, it means that the connection between your PC and the extender has been established.



```
C:\ F:\WINDOWS\system32\cmd.exe
Microsoft Windows XP [Version 5.1.2600]
(C) Copyright 1985-2001 Microsoft Corp.

F:\Documents and Settings\lsz>ping 192.168.1.254

Pinging 192.168.1.254 with 32 bytes of data:

Request timed out.
Request timed out.
Request timed out.
Request timed out.

Ping statistics for 192.168.1.254:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

F:\Documents and Settings\lsz>
```

If the result displayed is similar to that shown in the above figure, it means that your PC has not connected to the extender successfully. Please check it following below steps:

1. Check to see if your PC and the extender are right connected. The LED of LAN port and the LED on your PC's adapter should be lit up.
2. Make sure the TCP/IP for your PC is configured correctly. Since the extender's IP address is 192.168.1.254, your PC's IP address must be within the range of 192.168.1.1~192.168.1.253.



## Chapter 3 Basic Setup

This chapter introduces how to configure the basic parameters of your wireless range extender so that it can get wireless signals from other AP/Router.

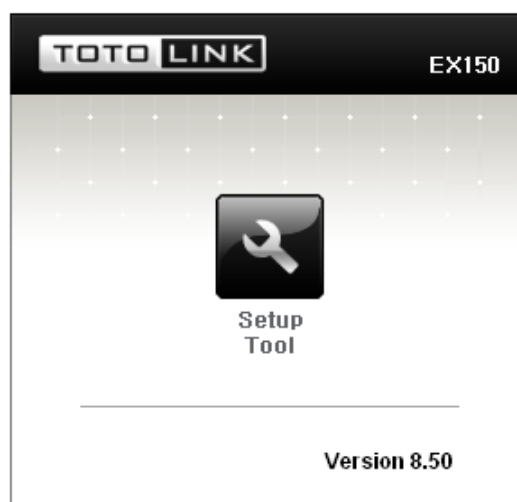
### 3.1 Login Web Interface

With a web-based utility, for example **Google Chrome**, the wireless N range extender is easy to configure and manage.

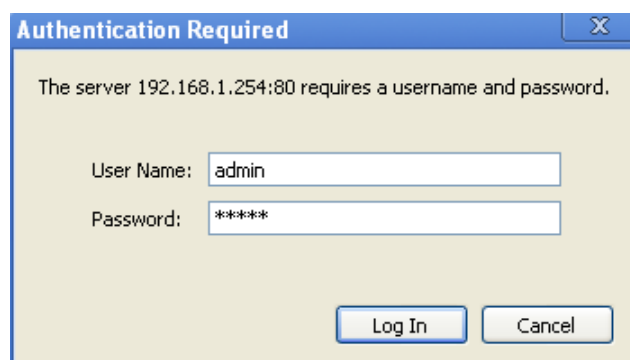
Connect to the extender by typing 192.168.1.254 in the address field of Web Browser. Then press **Enter** key.



It will show up the following page:



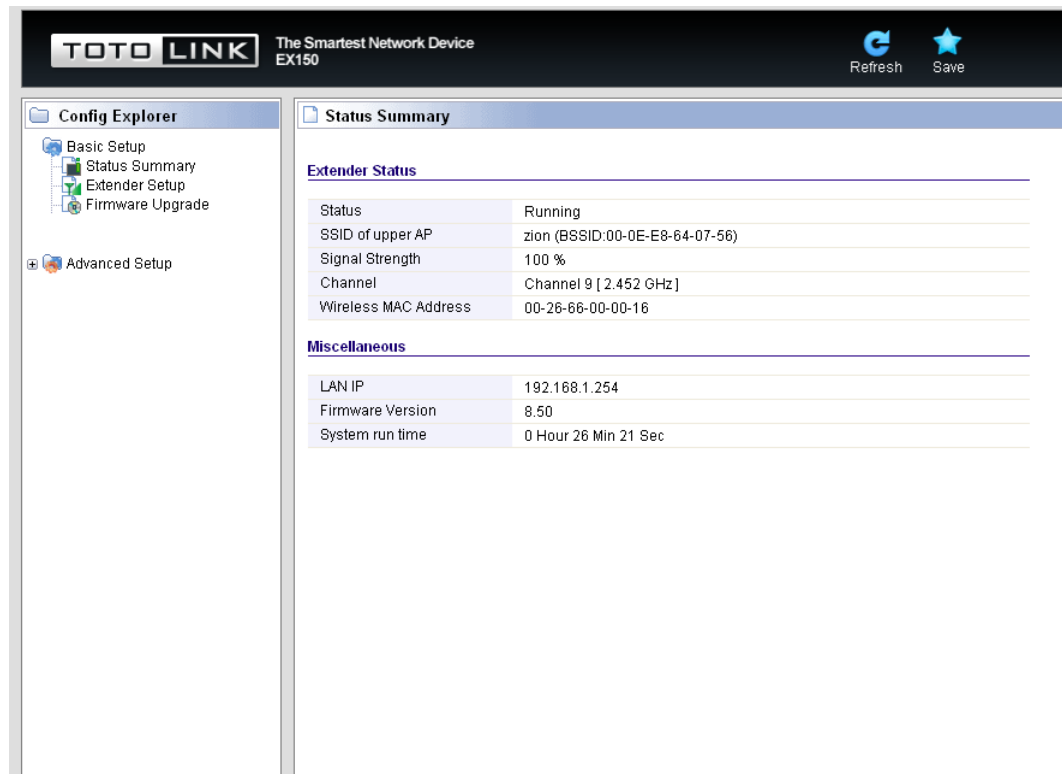
Click **Setup Tool** in the middle to enter the extender's setting interface. Then it will require you to enter valid User Name and Password.



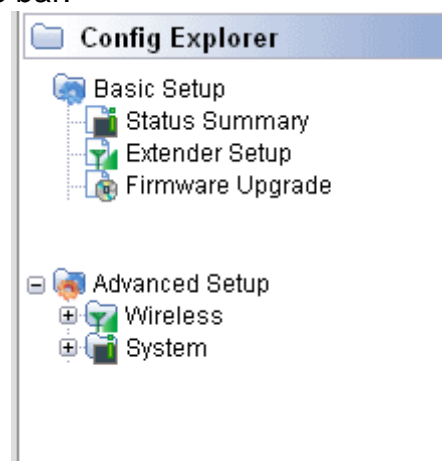
Enter **admin** for User Name and Password, both in lower case letters. Then click **Log In** button or press **Enter** key.

**Note:** If the above screen does not prompt, it means that your web-browser has been set to using a proxy. Go to **Tools menu>Internet Options>Connections>LAN Settings**, in the screen that appears, cancel the **Using Proxy checkbox**, and click **OK** to finish it.

Now you have logged into the web interface of the extender. The first page you can see is the current extender status.



On the left, it is a guide bar:



## 3.2 Quick Setup






Click **Extender Setup** on the guide bar to configure the basic parameters of this extender to make it repeater successfully.

Extender Setup	
Operation	<input type="radio"/> Start <input checked="" type="radio"/> Stop
Status	Stopped
SSID of upper AP	<input type="text"/> <input type="button" value="Search AP"/>
Authentication	<input type="text" value="Open System"/>
Encryption	<input checked="" type="radio"/> Disable <input type="radio"/> WEP64 <input type="radio"/> WEP128 <input type="radio"/> TKIP <input type="radio"/> AES
<input type="button" value="Apply"/>	

By default, the extender is disabled. Please click **Start** to enable the extender's function:

Extender Setup	
Operation	<input checked="" type="radio"/> Start <input type="radio"/> Stop
Status	Stopped
SSID of upper AP	<input type="text"/> <input type="button" value="Search AP"/>
Authentication	<input type="text" value="Open System"/>
Encryption	<input checked="" type="radio"/> Disable <input type="radio"/> WEP64 <input type="radio"/> WEP128 <input type="radio"/> TKIP <input type="radio"/> AES
<input type="button" value="Apply"/>	

Click **Search AP** to choose one available AP to connect.

Available APs	
<input type="button" value="Rescan AP"/>	
 <b>iptime-n6004</b> (Channel 9 [ 2.452 GHz,Lower,40MHz ] - 00-08-9F-0C-33-b0)  Wireless network with security (WEP)	Signal power - 42%
 <b>TOTOLINK N150RB</b> (Channel 6 [ 2.437 GHz,Upper,40MHz ] - 78-44-76-00-00-0a) Wireless network without security	Signal power - 55%
 <b>zion</b> (Channel 9 - 00-0E-E8-64-07-56)  Wireless network with security (WPA)	Signal power - 42%
Double click a AP row or click 'Select AP' button	
<input type="button" value="Select AP"/>	

Select one SSID that you want to repeat with and then click **Select AP**.

Rescan AP

(( ))	<b>iptime-n6004</b> (Channel 9 [ 2.452 GHz, Lower, 40MHz ] - 00-08-9F-0C-33-b0) Wireless network with security (WEP)	Signal power - 42%
(( ))	<b>TOTOLINK N150RB</b> (Channel 6 [ 2.437 GHz, Upper, 40MHz ] - 78-44-76-00-00-0a) Wireless network without security	Signal power - 55%
(( ))	<b>zion</b> (Channel 9 - 00-0E-E8-64-07-56) Wireless network with security (WPA)	Signal power - 42%

Double click a AP row or click 'Select AP' button
Select AP

If the SSID you selected is encrypted, it will pop up below window reminding you to input the network key to connect. Click **OK**.

The page at 192.168.1.254 says:
✕

Put the Network key and press 'Apply' button.

OK

The interface will get back to main page which shows the information and encryption method of your selected upper AP. Please type in the right Encryption key to connect to it successfully.

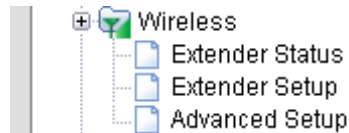
Operation	<input checked="" type="radio"/> Start <input type="radio"/> Stop
Status	Stopped
SSID of upper AP	<input type="text" value="zion"/> <span style="margin-left: 10px;"><span>Search AP</span></span>
Authentication	<input type="text" value="WPAPSK"/> <span style="margin-left: 5px;">▼</span>
Encryption	<input type="radio"/> Disable <input type="radio"/> WEP64 <input type="radio"/> WEP128 <input checked="" type="radio"/> TKIP <input type="radio"/> AES
Encryption key	<input style="width: 350px;" type="text"/>
<span>Apply</span>	

After configured correctly, click **Apply** to make it work.

## Chapter 4 Advanced Setup

The Advanced Setup includes Wireless and System settings. For wireless setup, since we have introduced the Extender's basic setup before, here we will mainly explain the Advanced Wireless Setup.

### 4.1 Advanced Wireless Setup



Click **Wireless---Advanced Setup**, you will see:

Advanced Setup	
<b>The following functions are settings for wireless expert.</b>	
Channel Bandwidth	<input checked="" type="radio"/> 20/40 MHz <input type="radio"/> 20 MHz Channel bonding option according to 802.11n Draft.
Tx Power	<input type="text" value="100"/> % ( 1 ~ 100 ) The wireless coverage is adjusted by increasing or decreasing the Tx Power. The range of value is 1 ~ 100. The higher power means the longer wireless coverage
Tx Burst	<input checked="" type="radio"/> Start <input type="radio"/> Stop Tx Burst may increase the performance. But, in the environment of many simultaneous wireless connections, Disabling this feature can be better solution.
Preamble Length	<input checked="" type="radio"/> Long Preamble <input type="radio"/> Short Preamble Short Preamble may increase the performance slightly. But for compatibility with old 802.11 lan card, use Long Preamble.
RTS Threshold	<input type="text" value="2347"/> bytes The frames which have more length than RTS threshold are transmitted using RTS/CTS method The less RTS threshold make wireless communication be more stable, but have less maximum throughput. The valid range is 1 ~ 2347.
Fragmentation Threshold	<input type="text" value="2346"/> bytes The frames which have more length than fragmentation threshold are transmitted after fragmented with setting value The less Fragmentation Threshold may make wireless communication more stable, but have less maximum throughput. The valid range is 256 ~ 2346.
Beacon Period	<input type="text" value="100"/> ms Normally use 100ms The range should be from 50ms to 1024ms.
<div>Initial Values Apply</div>	

**Channel Bandwidth:** this is the spectral width of the radio channel. Supported wireless channel spectrum widths:

**20MHz** is the standard channel spectrum width.

**40MHz** is the channel spectrum with the width of 40MHz (selected by default).

**TX Power:** please refer to the description on the page.

**Tx Burst:** enable this function will make it easy for you to enhance the

performance in data transmission.

**Preamble Length:** this option is to define the length of the sync field in an 802.11 packet. Most modern wireless network uses short preamble with 56 bit sync field instead of long preamble with 128 bit sync field. However, some original 11b wireless network devices only support long preamble.

**RTS Threshold:** determines the packet size of a transmission and, through the use of an access point, helps control traffic flow. The range is 0-2347 bytes. The default value is 2347, which means that RTS is disabled.

**RTS/CTS** (Request to Send / Clear to send) are the mechanism used by the 802.11 wireless networking protocols to reduce frame collisions introduced by the hidden terminal problem. RTS/CTS packet size threshold is 0-2347 bytes. If the packet size the node wants to transmit is larger than the threshold, the RTS/CTS handshake gets triggered. If the packet size is equal to or less than threshold the data frame gets sent immediately.

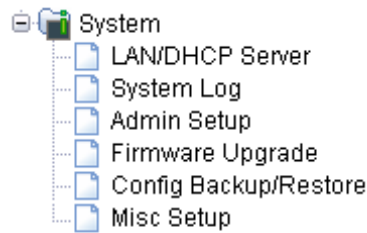
System uses Request to Send/Clear to send frames for the handshake that provide collision reduction for an access point with hidden stations. The stations are sending a RTS frame first while data is sent only after a handshake with an AP is completed. Stations respond with the CTS frame to the RTS, which provides clear media for the requesting station to send the data. CTS collision control management has a time interval defined during which all the other stations hold off the transmission and wait until the requesting station will finish transmission.

**Fragment Threshold:** specifies the maximum size for a packet before data is fragmented into multiple packets. The range is 256-2346 bytes. Setting the Fragment Threshold too low may result in poor network performance. The use of fragment can increase the reliability of frame transmissions. Because of sending smaller frames, collisions are much less likely to occur. However, lower values of the Fragment Threshold will result in lower throughput as well. Minor or no modifications of the Fragmentation Threshold value is recommended while default setting of 2346 is optimum in most of the wireless network use cases.

**Beacon Period:** By default, it is set to 100ms. Higher Beacon interval will improve the device's wireless performance and is also power-saving for client side. If this value set lower than 100ms, it will speed up the wireless client connection.

## 4.2 System

Click the plus sign beside the System menu to open up all the parameters contained, please see below:



### 4.2.1 LAN/DCHP Server

LAN/DHCP Server

LAN IP Setup

LAN IP	192	. 168	. 1	. 254	
Subnet Mask	255	. 255	. 255	. 0	
<input type="checkbox"/> LAN Gateway					
<input type="checkbox"/> LAN DNS					

**LAN IP:** by default, the LAN IP is 192.168.1.254, you can change it by your needs.

**Subnet Mask:** by default, this value is 255.255.255.0, you can change it as well.

### 4.2.2 System Log

System Log shows the working status of the wireless extender, user can check the running status information here:

System Log

System Log Setup

Operation	<input checked="" type="radio"/> Start <input type="radio"/> Stop	<input type="button" value="Apply"/>
Status	Log Count(Max Count) : 3(400)	<input type="button" value="Clear"/>
E-mail Report	Please, set the email address of administrator & SMTP mail server.	

System Log View

Timestamp	System Log Contents
*****	IP : 192.168.1.100 LOGIN Success
*****	IP : 192.168.1.100 LOGIN Success
*****	System restarted ( Version: 8.50)

### 4.2.3 Admin Setup

Here you can change the login account name and password, and administrator email information. For this device, you need to create a new one. Then click **Apply** to make it work.

**Admin E-Mail Setup:** If you want to receive IP routing log, set up Email address and SMTP server to receive it.

Admin Setup	
<b>Login Account Setup</b>	
Current ID & password	ID - admin Password - Configured
New Login ID	<input type="text"/>
New Password	<input type="text"/>
Re-type New Password	<input type="text"/>
<input type="button" value="Apply"/>	
<b>Admin E-mail Setup</b>	
Admin E-mail	<input type="text"/>
Mail Server(SMTP)	<input type="text"/>
E-mail of sender	<input type="text"/>
Use Authentication	<input type="radio"/> Use <input checked="" type="radio"/> Not Use
SMTP Account	<input type="text"/>
SMTP Password	<input type="text"/>
<input type="button" value="Apply"/>	

#### 4.2.4 Firmware Upgrade

This page allows you to upgrade the extender firmware to new version. Please note: DO NOT power off the device during the upload because it may crash the system.

Firmware Upgrade	
Firmware Version	8.50
Build Date	Wed Jan 30 13:48:28 KST 2013
To upgrade manually 1. Download a firmware at [ TOTOLINK Homepage ]. 2. Click [Browse] and choose a downloaded firmware 3. Click [Upgrade] button.	
<input type="button" value="Choose File"/>	No file chosen <input type="button" value="Upgrade"/>
<b>Note.</b> <ul style="list-style-type: none"><li>• Internet will be unavailable for upgrading firmware.</li><li>• Power down for updating firmware can be the cause of system halt.</li></ul>	

#### 4.2.5 Config Backup/Restore

This webpage allows you to save current settings to a file and reload the settings from the file which was saved previously. Besides, you could reset the current configuration to factory default.



Config Backup/Restore	
<input type="button" value="Config Backup"/>	Download configuration file on your PC
<input type="button" value="Choose File"/> No file chosen	Restore configuration by using Downloaded configuration
<input type="button" value="Config Restore"/>	
<input type="button" value="Factory Default"/>	To restore the factory default configuration, click this button.

#### 4.2.6 Misc Setup

Misc Setup provides Host name, Login page setup and how to run setup window settings.

Misc Setup	
Hostname	<input type="text"/> <input type="button" value="Apply"/>
Login Page Setup	<input checked="" type="radio"/> The login page would be displayed <input type="radio"/> The login page would not be displayed <input type="button" value="Apply"/>
How to run Setup Window	<input type="radio"/> Use Popup <input checked="" type="radio"/> Use current window <input type="button" value="Apply"/>